TRMM Monthly Status Briefing

April 4, 2000

FOT Overview

- Operations Status - Engineering Staff
  - Flight Ops Summary & Training - Lou Kurzmiller
  - Thermal, Electrical, & RCS - Andy Calloway
  - Deployables - Joe Kowalski
  - ACS, C&DH, & RF - Edwin Weidner
  - Power - Candace Shoemaker
  - CERES, LIS, & VIRS - Candace Shoemaker
  - TMI & PR - Joe Kowalski
  - Ground System - Edwin Weidner
  - Upcoming Activities - Andy Calloway

Flight Operations Summary

- Supported 540 SN events in March
  - 2 Yaw Maneuvers (presently -X forward)
  - 10 Delta-V Maneuvers
- 9 Event Rpts & 3 Generic Late Acq Rpts generated
  - ER #157: EPV failure (See ACS)
  - ER #158-163: Pertain to MI related problems (See RF)
  - ER #164: Late Acquisition 09:36 minutes (See Ground System)
  - ER #165: T1 Line Problem (WSGT to NCC) (See Ground System)

Flight Operations Summary

- Significant Milestones
  - C&DH: RTS risk reduction activity completed
  - PWR: PSIB s/w patch ver 2.5 uplinked successfully
  - CERES: Instrument operations continue
  - GITT Security Scan performed on MOC Strings 2 & 3
- Staffing
  - One console analyst joined FOT on 13 March
  - Seeking one additional Console Analyst candidate
  - One member of FOT Engineering staff leaving

Training

- All four Console Analysts are nearing Spacecraft Analyst Certification
  - Requirements include S/C subsystems tests and training, completion of the required reading list, and one supervised week as shift lead.
  - Completion is expected to occur within a month
- The most recent hire has completed the TRMM orientation program and is currently working towards his Console Analyst Certification

Thermal Subsystem

- Thermal subsystem is nominal

Electrical Subsystem

- Electrical subsystem is nominal

RCS Subsystem

- RCS performed nominally through 10 Delta-V maneuvers #167 - #176
- Fuel remaining is 606.578 kg (68.1% of total)
- Average fuel usage per maneuver remains between 1.3 kg and 1.6 kg
- Maneuver frequency average in March was every three days
  - EOL worst case (using 1.6 kg and every 3 days for the rest of the mission):
    - » 0.53 kg/day with 543.6 kg available (allows for reserves of 10 kg attitude control below 270 km, 40 kg re-entry, and 13 kg residual in tanks and lines)
    - » Beginning of orbit decay phase would therefore be in 1025 days (2.8 years)
  - Maneuver frequency is expected to gradually change to every 6 to 10 days

Deployables Subsystem

- -Y solar array drive temperature
  - Currently solar array drive continues to operate nominally
- Open Issues
  - AETD looking into the possibility of checking the glitch buffer by loading software stops that will enable the solar arrays to track past 90°
    - » Risk analysis continues: Currently it appears that the chance of the array getting stuck past 90° outweighs the benefit of checking for slippage

ACS Subsystem

- Daily EPV failed on 00-062 (ER #157)
- Largest Yaw Updates to date experienced after Delta-V #169 (0.97° and 1.44°)
- TDRS EPVs updated, requiring widened limits, on 00-073
- RTS #2 was corrected, to disable self, in RAM on 00-073 and EEPROM 00-074 (CCR #058)

ACS Subsystem

- Writing to EEPROM
  - Solar Array jitter patch (AR #74)
    - » Awaiting final simulation results (Deep Space Cal and non-nominal Yaws)
    - » AETD reviewing data to determine acceptance of patch
  - Correction for Magnetic Field Epoch (CCR #005)
    - » Awaiting AETD analysis
  - TDRS EPVs limits update (AR #60 - CCR #035)
- Possibility of pitching S/C to warm PR in Safehold or Sun Acq
  - Pitch versus thermistor locations analysis
- ACS Flight Software bug (CCR #053)
- FDF analyzing whether MOI needs to be updated (WR #007)

C&DH Subsystem

- UTCF was adjusted on 00-072 and 087
  - Current UTCF value is 31535996.847522 sec
- Launch TSM RTSs were replaced with NOOPs in RAM on 00-073 and in EEPROM on 00-074 (CCR #057)
  - RTSs #33, 55, 60, and 61 replaced in RAM on 00-073 as well
- VIRS RTE occurred on 00-090
- Open Issues
  - Writing from RAM to EEPROM (CCR #034)
    - » New TSM table #21 and RTSs # 2, 3, 13, 14, and 15
    - » Possible for next week
  - New DS filter table to record ACE data (CCR #048)
  - No-clock software patch developed (CCR #047)
    - » Possible FS-A failover option?

RF Subsystem

- Large amount of MI caused many dropouts, late acqs, and false locks, sometimes requiring extra data commanding
  - ER #158 - 163
- Generic Late Acq #50 - 52
- Open Issues
  - Offsetting the transponder frequencies looking more probable based on trending

Power Subsystem

- Low SOC counters close to 00-067, beta 0°
  - TSMs 31 and 32 (End of Day SOC) disabled 00-66 through 00-77
  - Operating with PSIB auto-SPRU (no trickle charge) disabled and C/D setting at 1.020 starting on 00-070
    - » To alleviate SOC counters getting low near beta 0°
    - » Monitor system with Code 563 close to beta ±58°
    - » May enable auto-SPRU if C/D running high
- PSIB new software loaded to RAM on 00-082:
  - Close Anomaly #73 : PSIB A Orbit Status Timer Unchanged
  - Included in the load:
    - » FSW (CCR #050) PSIB timer routines (AR #73)
    - » FSW (CCR #059) Incorrect load address following reset
    - » FSW (CCR #061) PSIB Battery 2 Voltage Differential Telemetry Bug

CERES Instrument

- Azimuth testing continues
  - Rotated between Biaxial azimuth angles, 90° - 270°
  - Goal is to return to Biaxial operations and Solar Calibrations
- Open Issues
  - Azimuth stall after Delta-V on 00-057 (Anomaly #79)
  - LaRC team investigating “noise” in science data
  - Continuous Biaxial operations planned
    - » Many issues (instrument and ground) associated with this operation
      - » Redefining ALL instrument command sequences to alter the stop azimuth rotation command
    - » Plan for transitioning between unrestricted and restricted (-20°<beta angle< +20°) Biaxial ranges
  - DR on ground system to incorporate new CERES requirements

LIS Instrument

- Routine MSFC real-time command requests performed on 00-075 and 00-091

VIRS Instrument

- VIRS Reset #12 occurred on 00-080
  - Anomaly Report #56 (VIRS Reset)
- 2 Solar Calibrations were performed this month on 00-064
- Blackbody temperature still being maintained between 9°C and 16°C

TMI Instrument

- No concerns or open issues

PR Instrument

- Open Issues
  - Frequency agreement expiration
    - » Working with Joe Deskevich to resolve
  - Opening of PR survival heater relays and notification of pitch study
    - » Will initiate talks with NASDA via USA TIL
      - Dr. Kummerow has reviewed it and the letter was sent out on 00-094

Ground System

- GITT Security Scan performed on string 2 on 00-076 and string 3 on 00-089
- Oracle archiving enabled on 00-081
- Event Reports
  - #164: 9 min. 36 sec. Late Acq, possibly due to TDW vector problem at WSC
  - #165: Playback line hit on 00-089

Upcoming Activities

- 0-2 Months
  - Special CERES operations in conjunction with Terra
  - SA Jitter Patch to EEPROM
  - Dump ACS / SC EEPROM memory and update GRIs
  - Compile new ODB version 11.2
  - System Software Release 8.1 testing and implementation
  - 2nd draft of TRMM Continuous Risk Management Plan
  - Publish and distribute TRMM 18 Month Report
  - Commence DSN/GN FOT training
  - Continue to close open CCRs, MOCRs, ERs, ARs, and MSR Action Items

Upcoming Activities

- 2-3 Months
  - Emergency EPO Switch location transfers
  - First draft of TRMM End of Life and Controlled Re-entry Plan
  - Complete initial CRM Database population and commence monthly CRM meetings
- 3-12 Months
  - Test, validate, and eventually accept new PACOR-A system
  - Testing of new PTP hardware and software deliveries
  - System Software Release 8.2 Delivery
  - Transponder Offset Activities